

## **IT PROJECT MANAGEMENT EFFECTIVENESS FRAMEWORK: A STUDY IN THAI FIRMS**

VIPAKORN VADHANASIN<sup>1,\*</sup>, SUTHAS RATANAKUAKANGWAN<sup>2</sup>,  
KAMALES SANTIVEJKUL<sup>3</sup>, PEERASIT PATANAKUL<sup>4</sup>

<sup>1</sup>Technopreneurship and Innovation Management Program, Chulalongkorn University,  
Bangkok, Thailand

<sup>2</sup>Department of Industrial Engineering, Chulalongkorn University, Bangkok, Thailand

<sup>3</sup>Department of Banking and Finance, Chulalongkorn University, Bangkok, Thailand

<sup>4</sup>Black School of Business, Pennsylvania State University, U.S.A.

\*Corresponding Author: vipakorn.v@gmail.com

### **Abstract**

A pragmatic approach to project management methodology can enhance success. Today IT project management process is moving to maturity stage. Despite the increase in Information Technology (IT), research on project management is still limited. This study reviewed the key elements pursuant to IT project management effectiveness and measurement criteria. Executives and managers from 12 leading Thai firms were interviewed to discuss success factors and the measurement of IT project success. The study found influencing factors of streamline of process and tools, emphasis on quality, scope control, change management, and platform for communication. The measurement criteria of both project perspective and organization perspective are used to assess the effectiveness in project management. Practical implications to improve project effectiveness were suggested, along with the potential for future research.

Keywords: Project management effectiveness, Information technology, Critical success factors, measurement criteria, Model innovation.

### **1. Introduction**

Today organizations are increasingly adopting project management practices in their work to achieve its goals. According to prior studies, an organization's effectiveness partly depends on the success of projects [1,2]. IT Project effectiveness includes the success of both new product development (NPD) and

software development (SWD) [2]. The need of researches in area of IT project management effectiveness has been increasing. Multiple empirical studies in this area has examined the practices in developed country [2-4]. Ahlemann, El Arbi [5], however, revealed that the project management methodology still suffered from limited effectiveness. There is a growing need for the management of projects in developing country where the practice is moving to maturity stage. Bryde [6] suggested the benefit of having the project management maturity in place. Therefore, this is a research gap to explore effectiveness in IT project management during the time that company is moving to the maturity stage.

Project management effectiveness refers to the success of the project [3]. The success of the project depends on measurement criteria. Project is most likely to be perceived success if the project accomplishes the technical performances specifications and mission and if it receives a high level of satisfaction concerning the project result among key people on the project team, and key users of the project effort [7]. Other components of project success include time to market, schedule, cost, quality, and customer satisfaction [8]. In general, the measures can be grouped as internal measures, which include cost, time, quality; and external measures, which include benefit to organization, and customer satisfaction [2]. In this paper, the effectiveness is defined by the measures of project results and the benefit to organization.

The objective of this study is to answer 2 questions: (1) what are the critical success factors influencing project management effectiveness in Thai firms? And (2) How Thai firms measure project effectiveness? To answer the questions, this research was conducted to explore a way to effectively manage IT projects. The research goal was to identify factors impacting the effectiveness in IT project management and purpose a measurement of such effectiveness. In this research, we focused on IT project management practice in Thailand for several reasons. First, the project management research in developing country is still limited. Second, we received the participation from Thai firms in this exploratory study. Third, IT project management practice in Thailand is moving from non-standard stage to maturity stage. This study can represent the results to achieve maturity stage of IT project management in developing country.

The study contributes to the knowledge area and practices in IT project management effectiveness. The research explores evidence from Thai firms that is developing and moving to maturity stage. The remainder of this paper is structured as follows: in the next section, we discuss the review of research works in project management effectiveness and measurement criteria. We continue with subsequent sections to discuss the research method, analysis, and results supporting the propositions. Finally, we present implications that contribute to literature and practice, also limitation and future research.

## **2. Literature Review**

### **2.1. Project management effectiveness**

The project management was widely used in 1950s by NASA space projects and US Navy [9]. The original concept was all projects are the alike and can be organized with the single set of processes and practices [10]. However, projects are actually different from one another and the single technique would not fit all. Shenhar, Dvir [9] proposed project management framework of NASA that

introduced the guidelines for tailoring projects and programs. The current most favourite guideline of projects management is based on PMBOK® Guide of Project Management Institute [10]. A project has unique characteristics that specify begin date and finished date. Project implementation allows organization to change corporate strategy to action following project management methodology [10]. Adams, Bessant [11] suggested the organization to establish formal project processes and make use of tools and techniques that encouraged the achievement of project efficiency. For quality related, Bertram, Voids [12] mentioned about issue tracker, which is not only a database for tracking issues and bugs, but also a tool for communication and coordination with related stakeholders within and beyond the project team. PMI [10] applied Fishbone Diagram to identify project obstacles in order to cope with the obstacle factors. Caniels and Bakens [13] found that the quality of project management information system had an impact on the quality of decision making. Project effectiveness and efficiency are resulted from project that was proactively identified to assign and fix errors in the application, and implement new features in the software [14].

Effective project management is a key to ensure that the service needed by the client is efficiently developed, tested, and maintained [4]. In term of IT project management effectiveness, Hyväri [3] found that planning, organizing, networking are the most significant project practices. The quality of delivered software that fit client's needs and business environment promotes the project effectiveness [4]. For IT projects, the major risk is users not using information technology as the way designed to relate to their work practices [15]. This argument is supported by Sherer, Kohli [16] that mention the overcoming resistance to change leading to the success in IT project implementation. As the success in IT project management is not one-fit-for-all, change management drives the success in project implementation. Previous researches have commonly emphasized the performance achievement of cost, time, and quality. Other factors are varied from projects to projects, but focus on customer and stakeholder satisfaction. Factors influencing project management effectiveness are listed in Table 1. This research, at this stage, included cost, time, quality, customer and stakeholder satisfaction. Additional factors related to IT project management may include during the interviews in qualitative research phase.

**Table 1. Factors influencing project success.**

<b>Authors</b>	<b>Factors influencing PM effectiveness</b>
Milosevic and Patanakul [2]	Standardize PM tools, leadership, and process
Hyväri [3]	Organization structure, project management tools, leadership behaviour
Chakrabarty, Whitten [4]	Relationship quality, Task-Technology-Structure fit, effective knowledge management, effective quality assurance and control, effective management of costs, personnel distribution, and intelligent use of various tools and technologies

## 2.2. Measurement criteria

Project success can be measured from the results of project management and the outcome of the project: for example, product or service. To indicate project achievement, the measurement metrics and target should be defined.

During project process, the criteria should be measured on every project milestone. This encourages continuous improvement in the quality control process of the project. The measurement metric should establish for all projects in the organization to benefit the management in portfolio level. According to Milosevic and Patanakul [2], measurement of project success can be grouped as internal measures and external measure. The internal measures include cost, time, and quality, whereas the external measures include benefiting organization and benefiting customer. Table 2 summaries the studies related to the project management measurement, which indicates the effectiveness of projects.

**Table 2. Research of project management measurement.**

No.	Measurement Areas	Ref.
1	<ul style="list-style-type: none"> <li>• Iron triangle: cost, quality, time</li> <li>• System: maintainability, reliability, validity, information-quality use</li> <li>• Organization benefits: improved efficiency, improved effectiveness, increased profits, strategic goals, organizational-learning</li> <li>• Stakeholder benefits: satisfied users, social and environmental impact, personal development, professional learning, contractors' profits, capital suppliers, content project team, economic impact to surrounding community</li> </ul>	Atkinson [17]
2	<ul style="list-style-type: none"> <li>• Project efficiency: e.g. problem-solving cycle, the use of certified processes</li> <li>• Tool: e.g. the use of computer-integrated manufacturing processes</li> <li>• Communications: e.g. number of meetings and contacts</li> <li>• Collaboration: the use of guest engineers, the percentage of projects in co-operation with third parties, the extent to which decision-making at top levels is characterized by cross-functional discussions</li> </ul>	Adams, Bessant [11]
3	<ul style="list-style-type: none"> <li>• Project progress (the project-related benefits): time, cost, quality</li> <li>• Project performance (the business-related benefits)</li> <li>• Customer: benefit for customers and stakeholders</li> </ul>	Griffith-Cooper and King [18]
4	<ul style="list-style-type: none"> <li>• Resource productivity</li> <li>• Organizational learning</li> <li>• Time-to-market</li> <li>• Customer satisfaction</li> <li>• Personal growth</li> <li>• Personal satisfaction</li> </ul>	Baker, Murphy [7]

No.	Measurement Areas	Ref.
5	<ul style="list-style-type: none"> <li>• Within time</li> <li>• Within cost</li> <li>• At the desired performance/technology level</li> <li>• Utilizing the assigned resources effectively and efficiently</li> <li>• Accepted by customer</li> </ul>	Kerzner [19]
6	<ul style="list-style-type: none"> <li>• Traditional measures: time, cost, quality, customer satisfaction, benefits to organization</li> <li>• Extension to the traditional measures: transfer to operations and delivery of benefits</li> <li>• Recent measures: Organization change management</li> </ul>	Crawford, Aitken [20]

### 3. Method

This research aims to study the critical success factors influencing project management effectiveness in Thai firms and the criteria to measure the effectiveness. The case focused on IT projects located in Thailand among various industries. One benefit of using the case study research is that the study can be conducted in a real-life business setting. Practice of project management can be observed. In addition to the contribution to the literature, the findings of this study should provide practical information to practitioners [11]. In this study, 12 qualified Information Technology experts were selected (see Table 3). All experts were selected from management positions with over 10 year experiences working in IT projects. Three of the experts were suggested by other experts that were interviewed earlier. The interviews had been conducted from February 2015 to August 2015. The experts ranged from project manager, IT manager, IT director, and Managing Director (MD). The work positions of each expert are listed in Table 3.

Data was collected using semi-structured qualitative and in-depth face-to-face interviews. Each interview was conducted individually at pre-determined time and location. The interview section lasted approximately 60-120 minutes, focusing on the practices of IT project management, issues associated with IT project management processes, critical success factors, and measurement criteria of project effectiveness. Notes were taken during the interviews. All interviews were conducted in Thai, recorded and transcribed. The tapes were manually transcribed and coded in Thai, then translated to English. Notes were also taken concerning the experts' answers to, and explanations for each question. Documents and templates received from respondents were reviewed. Within case and cross case analyses were conducted by two researchers. Literature was used for triangulation. Chains of evidence were developed to gain an understanding of IT project management effectiveness and the critical success factors employed by Thai firms. Also, the measurement criteria are analysed and grouped to clearly demonstrate in the model.

**Table 3. Position and industry of the experts in the study.**

Order	Position	Industry	Number of projects/Year	Average project budget (Thousand US Dollars)
Expert 1	IT Director	Healthcare	10-20 projects	30 – 285
Expert 2	IT Division Manager	Healthcare	20 projects	80-140
Expert 3	Project Manager	Pharmaceutical	10-20 projects	55 – 285
Expert 4	IT Manager	Healthcare (Medical device)	4-5 projects	30
Expert 5	Project Manager	Energy	10-20 projects	30 – 55
Expert 6	Project Manager	Banking	2-3 big projects and more than a hundred medium and small projects	3,000
Expert 7	Managing Director	Service (Develop and deployment)	4-5 projects	140
Expert 8	Managing Director	Service (Develop and deployment)	10 projects	55 – 170
Expert 9	IT Department Manager	Retail (Home and improvement)	2-3 big projects and a number of medium and small projects	110 – 285
Expert 10	IT Division Manager	Food (with 50 sub-companies)	Approximately 4 large-sized projects	30 – 1,400
Expert 11	IT Department Manager	Automotive	1-2 big projects	30 – 285
Expert 12	IT Director	Automotive	10-15 projects	30

#### 4. Results and Discussion

The findings revealed the factors which affect IT project management effectiveness in Thai firms. These can be measured at both project and organization level. The following sections discuss the elements of each factor and how they impact on project effectiveness in Thai firms.

#### 4.1. The influential factors in project management effectiveness

Based on our in-depth interviews, we found five factors that influenced project management effectiveness in Thai firms. These were project management process, quality management, scope management, change management, and communication management.

##### 4.1.1. Availability and accessibility of process and tools

Based on our study of all 12 firms, we found that IT project managers were promoted from technical positions. All firms agreed that having strong management skills allowed the project manager to work on project management tools smoothly. Expert 7 stated that *“all of their project managers previously held technical positions; the new project managers therefore had to build their management skills to utilize tools effectively.”* This finding is in line with earlier studies [2,21], which found that the ability to use tools effectively impacted the project success.

When asked about their IT project management processes, the experts commented that their organizations had guidelines and templates for project managers. Expert 11 stated that *“the processes must be streamlined so that new project managers could easily apply the guidelines in their projects.”* Experts 5, 9, and 10 agreed to waive some processes for small projects. Experts 2, 10, and 12 had learned from their partners to adapt Capability Maturity Model Integration (CMMI) process to their practices. CMMI is a process improvement maturity model addressing development and maintenance activities in software industry [22]. These 3 experts gained experience from their partners to strengthen organization methodologies. We also found that industry standards impacted on project management processes. Expert 1 stated that *“the hospital industry standard required the company to maintain paper based documentation.”* Experts 1 and 5 practiced agile project management methodology. Expert 1 applied agile project management for all projects, while expert 5 applied the agile process only for projects involving new applications with existing business processes followed the same functions and features. Agile project management involves real-time interaction with users to both understand and suggest their requirements. The varying usage of different project management practices and differences in use depended on the context of the project [23]. Based on our findings and analysis we propose:

**Proposition 1.** The project manager must follow project management processes and apply tools which enhance project management effectiveness. The processes can be customized from project to project; small projects usually have less process than larger ones.

##### 4.1.2. Emphasis on quality

The research evidence, developed through in-depth interview analyses, revealed that to be effective in project management, an organization should establish an environment that supports such activities to meet quality standards, and not rely on a risk plan. Expert 3 stated that *“quality was a must for the pharmaceutical industry, not only the project quality but also the product quality.”* Therefore,

there was no compromise for errors in production; the testing process was crucial for solving all errors before production commenced. Pass results of systems tests and completion of technical documents can ensure the confident of clients and allow them to do tasks by themselves [24]. Expert 4 indicated that *“quality was essential to manage and complete issues; however, management issues were usually delayed since they had to wait for answers from the global mother company.”* The benefit of management by issue tracker is supported by Bertram, Volda [12]. Expert 12 stated that *“quality in design automation was paramount and the application must have no faults.”* Therefore, quality assurance is a must to ensure the standard of project management process. This was supported by expert 2 who stated that *“even if the application had many benefits, nobody wished to work on it if the performance was poor.”* Expert 9 mentioned that *“the quality of project deliverables impacted from the quality of the workers.”* The project scope must be controlled to ensure that no major bug resided in the system. This was supported by expert 10 who stated that *“quality was hard to measure; projects should focus on the user acceptance test.”* All the experts considered that project quality is a key to accomplish stakeholder satisfaction and project success. From the research finding, we state:

**Proposition 2.** Both internal and external test are crucial for testing and solving all the major issues before production commences. However, quality management processes in the service industry must focus on solving issues in a timely manner.

#### 4.1.3. Scope control and change management

The evidence from all 12 firms indicated that ability to control scope was considered as one of the most important factors leading to the effectiveness of IT project management. Expert 1 stated that *“the scope of project management changed continuously.”* He thought that *“project management was a very emotional process and agile project management best fitted with his organization.”* Expert 5, however, followed agile project management only for projects with easily controlled scope. The scope of agile project is usually created with minimal but can be flexible. Agile project management tends to reduce formalized processes and have a significant impact on project success [15, 25]. Expert 8 usually worked on projects with complex scope that had similar patterns; he indicated that *“it was easy to control the scope if the project manager understood what the users needed.”* Expert 6 worked on mega projects where the budget is over 2.8 million dollars and the scope was very hard to control. Any unit requesting new requirements had to pay for the cost of efforts and impact assessment. Expert 12 stated that *“projects with similar scope should have equal requirements and change should be strictly controlled.”* However, expert 3 pointed out that *“changes in industry standards impacted on changes in project scope.”* Project scope, measured by project duration, has an impact on degree of risk [26]. The longer the project duration, the more risk that changes in industry standard will impact project. Expert 10 indicated that *“design changes may be acceptable if they have reasonable explanations and are not the result of weak project control.”* From this finding, we propose:

**Proposition 3.** The greater the ability to control scope, the greater will be the project management effectiveness.



We found a pattern from the case analyses which indicated that Thai firms tended to spend more effort on change management for large-sized projects. However, hospitals were exceptional cases where change management was an important factor for all projects. Expert 2 specified that *“project management was change management; the organization initiated projects because they planned to change, thus the project must persuade stakeholders to agree with the change.”* The statement aligns with Griffith-Cooper and King [18], who indicated that the nature of project management is change. This was supported by expert 1, who agreed that the major activity in a project was change management. Project including its environment are in continuous process of change, so that the project alternative activities should be done as fast as possible [27]. Recent literatures emphasized that change was an inevitable consequence of project implementation [28]. Expert 1 stated that *“our project teams managed change by motivating end users to use the new application.”* Expert 7 used a power map to guide the project and to approach each stakeholder, especially since the project worked with the government. Experts 9 and 12 agreed that support from top management influenced users to accept changes in new business processes and resulted in project effectiveness. Supports from top management enhance the likelihood of project success [29]. For mega projects, expert 6 dedicated a change team to coordinate, educate, train, and inform other units. Expert 10 specified that *“top management must communicate to external stakeholders for non IT details to encourage the collaboration between external stakeholders and the project.”* Expert 4 stated that *“our organization had changed business processes every year, and employees had to accept the changes.”* The statement of expert 4 impacted from the leadership behaviour from the German mother company on the ability of individual employees to accept change [30]. From the analysis, we state:

**Proposition 4.** Change management processes are crucial for large-scale projects that involve many parties and long duration. The greater the activities of change management, the greater will be the project management effectiveness.

#### 4.1.4. Platform for communication

The data collected indicated that communication is another important factor for project management effectiveness. All firms in our study reported project status via formal meetings. Experts 7, 8, and 12, who were all top management, agreed that they reviewed project status at meetings. They could determine whether the project was delayed or had issues, even if the project manager tried to hide these details. Our finding supports the importance of face-to-face communication as key success of the projects [31]. Expert 10 followed his partner’s status through meetings; he stated that *“any partner who lacked quality did not send status reports.”* Expert 10 was responsible for many sites outside Bangkok; these projects needed coordinators to communicate to the local sites. The coordinators were trained in Bangkok and they trained the end users in their regions. Expert 4 adopted technology to help in communication, such as videoconferencing and SharePoint. Other firms also used SharePoint for project knowledge sharing. The mega projects of expert 6 had approximately 60 vendors and many parties to communicate with. Therefore, the core team person championed the group and communicated with all other teams and with his own group. Vertical communication can cause a communication gap and delay in message, but this

might be the best communication model for a large project team. Expert 6 stated that *“we received hundreds of emails every day and did not have time to check them.”* This demonstrated ineffective communication channel via email in Thai project environment. Expert 6’s most effective communication channel was through meetings. While Monteiro de Carvalho [31] identified the number of meetings insufficient for analysis of project performance, expert 6 stated that *“we spent all office hours for meeting; therefore, other activities had to be done beyond regular office hours.”* She also used social media as an information communication channel to effectively connect with her team. Using social media can benefit communication and boost trust in project team [32]. From the finding, we propose:

**Proposition 5.** The greater ability to communicate, the greater will be the project management effectiveness.

## 4.2. The measurement criteria of project management effectiveness

According to Hyväri [3], project effectiveness is defined by to the success of the project. In addition, the effectiveness of the project has an influence on organization’s effectiveness [1]. Organization typically measure project success by multi-criteria, such as from organizational, project, and personal perspectives [7, 18,33]. From this study, we categorized the criteria for measuring project management effectiveness from both the project and the organization perspectives. These criteria are time-to-market, goals, customer satisfaction, cost, contribution to organization change, and resource productivity. The use of these criteria to measure effectiveness in project management implied that they are also the expected results of project management.

### 4.2.1. Criteria from the project perspective

Success criteria differ from project to project depending on a number of variables e.g. project size, identity, industry, complexity and stakeholders involved [34]. We found from the case interviews that, firstly, time-to-market was one of the criteria that firms use to judge effectiveness in IT project management. Expert 2 mentioned that *“technology changes quickly; therefore, time-to-market was critical to ensure the technology was still compatible when the project was launched.”* Information from other cases also supported time-to-market as an important criterion for measuring IT project effectiveness. Secondly, we learned from cases that meeting project goals was also an important criterion used to measure project management effectiveness. Experts 3, 6, 7, 10, and 12 agreed that projects were successful when they achieved all their goals. All the projects of expert 2 had clear key performance indicators (KPI) to measure success. However, expert 9 specified that *“user requirements changed over time, and sometimes this impacted on project goals.”* The project manager must convince top management to maintain the original scope and meet project goals. This finding indicated that end users did not focus on project goals, and top management still evaluated whether the project had met the goals. Thirdly, the evidence from our research showed that customer satisfaction was used as a criterion to assess effectiveness in project management. Expert 11 mentioned that *“project success can be evaluated by echoes from both users and management.”*

Expert 5 run Look-Back process 1 year after project completion to review whether the application needed improvement. Expert 2 measured quality from a project satisfaction survey. IT department circulated the survey 3 months after project completion to measure the satisfaction of (1) application performance, and (2) benefits to the individual and the organization. However, expert 1, who used agile project management methodology, indicated that *“quality was a measure of solving errors and bugs on production systems as quickly as possible.”* The finding of this criterion supported the literature on project success measures in terms of customer satisfaction [7,33]. Lastly, cost was used as another project success measurement, and was also an important criterion for measuring project effectiveness. Experts 7, 8, 9, 10, and 11 agreed that cost was an important measurement criterion for project management effectiveness. Expert 8 mentioned that *“top managers were concerned about time and budget, while project managers were concerned about margins.”* Cost was related to time, and delays in the project impacted on costs. Cost was a major concern to achieve project time-to-market. From the review and analysis, we propose:

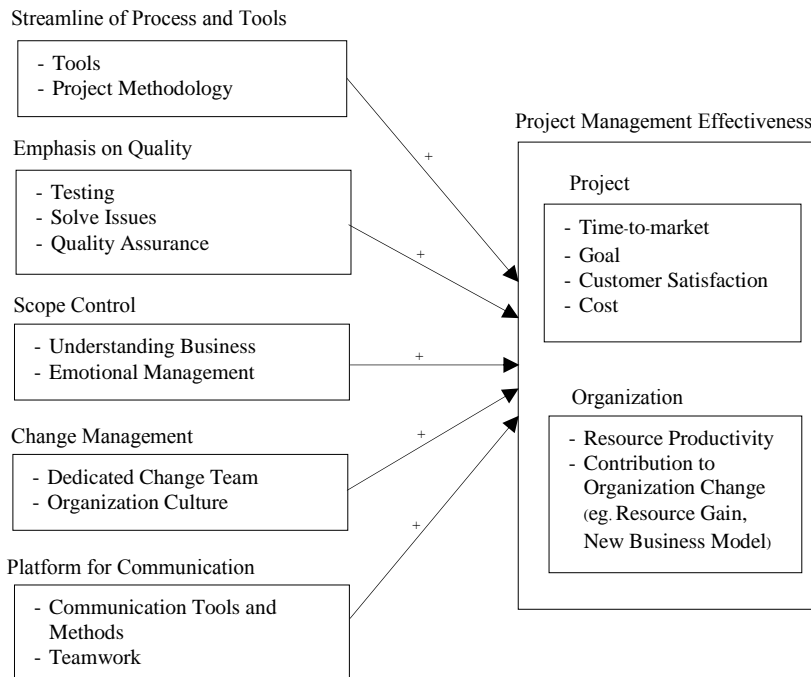
**Proposition 6.** At the project level, project management effectiveness is measured by project goal, time-to-market, cost, customer satisfaction, and management satisfaction.

#### 4.2.2. Criteria from the organization perspective

An organization project effectiveness is significantly impacted by lifecycle management processes and systems implemented in the organization [35]. Project management temporary success might not be sustainable once a product or service is delivered [36]. Therefore, measurement criteria from organization perspective should be undertaken at different points in time for different purposes. Today project success expands from product and service success to organization success [37]. The evidence from our study indicated that contributions to organization change and resource productivity were also criteria for determining project management effectiveness. We found that except for the measurement of project level, firms evaluated projects at organization level. For projects using breakthrough technology, organizations experienced new knowledge and gained competitive advantage. Expert 7 indicated that *“project measurement criteria varies from project to project; firms accepted lower margins for projects that contributed to new business processes or new technology.”* Expert 6 gave an example of organization change on a project to support new business processes. Another measurement at organization level was resource productivity. Our data indicated that project teams consisted of people with varied skills from inexperienced juniors to project managers. Expert 9 mentioned that *“her organization’s turnover was high and the staff left firm when their skills were improved.”* The organization had to train new employees to fill vacancies and work on project activities. High turnover rate is a common issue that negatively impact software project [38]. The most effective training for expert 9 was on-the-job. This type of training impacted less on project outcome, since the project had to dedicate time for preparing skills. In addition, the organization sometimes had resources available for a current project to utilized them. Thus, the organization occasionally requested the project to assign activities to vacant resources; the offered resource might join the project. This implied that resource productivity was another measurement criterion for project management effectiveness.

In conclusion, these cases showed that at the organization level, project management effectiveness was judged, based on the success of organization change and resource productivity. From this finding and analysis, we suggest:

**Proposition 7.** At organizational level, project effectiveness is measured by resource productivity and contribution to organization change.



**Fig. 1. IT project management effectiveness framework.**

Figure 1 shows a framework underlying the effectiveness of project management, proposed from our study and presented by influencing factors and measurement criteria. To accomplish the effectiveness in IT project management, firms must measure both at project level and organization level. The first factor influencing project management effectiveness is streamline of process and tool (Proposition 1). Project managers should have skills to utilize project management tools and follow the processes. Second, it is important that projects emphasis on quality standards (Proposition 2). Project quality includes testing, solving issues, and quality assurance. Third, effectiveness in IT project management depends upon scope control (Proposition 3). This includes understanding business processes and emotional management. To control scope, activities of monitoring and control must be done throughout the project life cycle. The fourth factor is change management, including having dedicated change teams and organization culture (Proposition 4). This factor is crucial, especially in large scale projects. The last factor in IT project management effectiveness is platform of communication (Proposition 5). Having efficient communication tools and strong teamwork contributes to the effectiveness of project communication management. When asked about the measurement criteria of IT project management effectiveness, case informants suggested that at the

project level, the effectiveness of project management should be measured against time-to-market, project goals, customer satisfaction, and cost (Proposition 6). In terms of measurement at organization level, the contribution to organization change and resource productivity is addressed (Proposition 7). The proposed framework presents the big picture underlying the effectiveness of IT project management.

The framework suggests that IT project management model innovations consists of critical success factors influencing project management effectiveness. To maintain business sustainability, the measurement criteria are also described in the model. The innovation of project management effectiveness model is proposed as means to strategically create business cases on a regular basis as an inherent, deeply integrated element of project activities.

## **5. Implications**

### **5.1. Contribution to literature**

This study proposed factors influencing IT project management effectiveness, including measurement criteria. As part of the research outcome, we illustrated 7 propositions, proposed as a framework underlying project management effectiveness. The study used evidence from Thai firms to support the literature on project management critical factors, and suggested measurement criteria. All propositions were verified and developed as research hypotheses for future empirical study.

### **5.2. Contribution to practices**

The research result suggests a model to improve IT project management effectiveness by identifying factors and measurement criteria. To achieve project management effectiveness, firms should enhance the skills of project managers to take advantages from tools and methodology. The quality of both process and product must be maintained. Checkpoints to manage quality are important to ensure that the project outcome meets the standards. Scope management includes understanding business and emotional management. Project managers should present business competency and people skills to their project teams. Activities of monitoring and controlling must be done at each checkpoint to control project scope. Large projects should have dedicated change teams to prepare stakeholders for the new processes. Organization culture also impacts on the degree of user resistance to change. Top management support will help solve issues from change management. The project should have both formal and informal channels of communication, and these channels must be practical for working in a project environment. Teamwork also supports effective communication. The criteria for measuring project management effectiveness should be set to match each type of project. Top management should prioritize measurement criteria, which should be challenging but also practical. Measurement criteria may be set at both project and organization level dependent on the expectation of the project.

## **6. Conclusions**

This research focused on the IT industry in Thai firms. The exploratory study was conducted to investigate the related factors of project management effectiveness,

to discover how organizations measure project success. The results suggest new propositions that can be deployed in both future research and practice. The framework supports that effectiveness in project management depends on the factors included streamline of process and tools, emphasis on quality, control scope, change management, and platform for communication. In addition, the effectiveness of project management should be assessed in terms of time-to-market, project goal, customer satisfaction, cost, contribution to organization change, and resource productivity.

The researchers collected data from in-depth interviews with 12 extensively experienced experts. This research had limitation in sample size due to the nature of our chosen methodology. The future research should confirm the results with broader sampling with quantitative methodology.

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